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with straight lines, with the exception of the curve at its extreme end. The line of projection shown by the angle A B and the intersecting members are given on Fig. 2 in the same plate. These lines when raised to position will stand directly over those of the plan, so that members of both are seen to range exactly with each other.

It will be noticed that the member on Fig. 2, marked D, is much wider than the corresponding member, J, on the plan Fig. 1. This teaches a lesson which may be of great service in many ways to the student who thoroughly masters the problem; to some workmen this simple solution may seem a small matter, but to those who think and who understand its application it will be found to be a matter of great importance in constructive art.

By a proper application of the foregoing problem, many works that appear difficult of execution and complicated in their nature may often be reduced to such a stage of simplicity that any ordinary mechanic will be able to understand them without effort.

If the student will draw this figure on a piece of cardboard, then cut the cardboard through on the lines marked *xxxx*, and fold it over on the lines marked *ooo*, laying the point C on the point A, he will have at once a practical application of the rule, and he will understand without further explanation the great utility of the problem.

The spaces marked *s s* are cut out to give a better idea of the working of the rule.

### Correspondence.

WE invite communications from our readers in matters connected with the trades we represent. Be brief, courteous, and to the point.

#### *Editor of the Wood-Worker :*

I SEND you the following method, which I think is new, for obtaining the stretchout of a circle : Set your compasses at A, Fig. 9, Plate 43 ; draw one half of a circle ; draw the base line B L, and the perpendicular line A B. Set your compasses at B, and describe the circle C ; put your right angle on the semicircle at B and C ; then intersect the base line at A, and from D to E you have the length of the stretchout of one fourth of the circle.

G. H. VAN PATTEN.

IOWA CITY, IOWA.

#### *Editor of the Illustrated Wood-Worker :*

THE following is a method of describing an oval, which I am sure will prove useful to many of your readers : Draw P K, Fig. 9, Plate 43, equal to intended length of oval ; bisect P K by *c i* at right angles, making O L and O H each equal to half the breadth of oval ; then describe quarter-circle *g J H* with O as

a centre ; make *g J* one third of quarter-circle, and draw O J *m* ; on O as centre, with o P as radius, strike arc intersecting at *m* ; draw J *n* parallel to P K and *m n* to C H : now *n* will be a true point for a mathematical curve. On *n* and H make intersections as shown, through which draw dotted lines cutting L H at *c*, which is one centre. Take radius *c H* and set it from P to *f* ; then on *f* and *c* make intersecting arcs through which find centre *e* ; draw *c e* produced towards *n*, thus determining the limits of the arcs comprising one quarter of the oval.

W. H. C.

ORILLIA, ONT., May 16, 1879.

#### *Editor of the Wood-Worker :*

IN the May number of the WOOD-WORKER, Plate 39, I find it easy to understand all the lines in projection without referring to the explanations, with the exception of the elliptical curve, for which no rule to obtain is given on the plate. Will Mr. Riddell or some of your advanced readers explain how the two foci for the ellipse are found ?

S. P.

FULTON, N. Y., May 12, 1879.

[S. P. will find the ellipse and some of its qualities fully described in the March number of the WOOD-WORKER.—ED.]

#### *Editor of Wood-Worker :*

I FORWARD you a drawing of a carpenter's gauge-head (shown on Plate 43, Fig. 10) which requires no thumb-screw, wedge, or other fastening, only requiring to be turned off the centre slightly to be made fast on the gauge stem. This will be new to many of your readers. It can be readily understood from the drawing, and any carpenter can make a pair of gauges for himself in this style in less than an hour.

I also forward a simple method, though not a new one, for obtaining an octagon. The drawing (Fig. 12, Plate 43) explains itself.

F. W. H.

ST. LOUIS, MO., April 27, 1879.

### Work and Pleasure.

IT is not uncommon for those who have much work to do to complain that they have little or no time for enjoyment. This is especially true of the young. The very name of play or pleasure has a magical transforming power. That name makes toilsome pastime a delight ; while the idea of work often makes the easiest task seem oppressive. It is not to be denied that there is wisdom in proper recreation and diversion for the laborer. They are necessary to keep up the